

## **TITLE of the INVENTION**

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"Methods and devices for decoding  
one-point algebraic geometric codes"

## **TEXT of the ABSTRACT**

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The present invention relates to a method of decoding a one-point algebraic geometric code of dimension  $k$  and length  $n$ , in which, in order to identify the position of the errors in a received word, the syndromes matrix  $S$ , of size  $(n-k) \times (n-k)$ , is defined, of which the elements  $S_{ij}$  of each line  $i$  are calculated, for  $j$  between 1 and  $w(i)$ , where the boundary  $w$  is a decreasing function, using the syndrome  $\underline{s}$  of the received word. According to the invention, matrices  $S^u$  are constructed for the successive values of  $u$  starting with  $S^1 = S$ , and, for  $u > 1$ , each matrix  $S^u$  is obtained by performing on the matrix  $S^{u-1}$ , column permutations where appropriate, then linear manipulations involving the line of index  $u$ . These steps are performed in such a manner as to find a matrix  $S^\lambda$  which has a line of index less than or equal to  $\lambda$  of which the elements are zero in the first  $w(\lambda)$  columns. The invention also relates to devices and apparatuses adapted to implement this method.

Figure for the abstract: FIG. 4